United States Court of Appeals

for the

District of Columbia Circuit

TRANSCRIPT OF RECORD

UNITED STATES
COURT OF APPEALS FOR THE
DISTRICT OF COLUMBIA

FILED AUG 31 1939

Joseph W. Stewart

CLERK

In the

United States Court of Appeals

for the District of Columbia

No. 7414—April Term, 1939

469

CLAYTON S. WOLF and HARRY A. CURTIS,
Plaintiffs-Appellants,

v.

CONWAY P. COE, Commissioner of Patents,
Defendant-Appellee.

BRIEF FOR PLAINTIFFS-APPELLANTS

ROBERT AMES NORTON,
Attorney for Plaintiffs-Appellants.

JEFFREY PRESS, INC.

INDEX.

PAGE

1. General Statement 1
2. General Question Involved 1
3. The General Nature of the Invention 3
4. Error in the Court Below 5
5. Nature of Problem Solved by Inventors 5
6. Problem Solved by Inventors One of Difficulty and of Great Industrial Importance 7
7. Solution of the Problem 8
8. The Combination of References Relied Upon by the Patent Office and the Court Below 10
9. The Basic Reference Relied on by the Court Below 11
10. Plaintiffs Unable to Obtain Suitable Product Using the Process of the Smith Reference Upon Which Rejection Is Based 13
11. References Not Properly Combined in Fact or in Law to Meet the Process Defined in Claims 1, 2 and 18 of Plaintiffs' Application for Patent.. 14
12. References Not Properly Combined in Fact or in Law to Meet the Process Defined in Claims 3 and 7 in Plaintiffs' Application for Patent.... 17
13. References Not Properly Combined in Fact or in Law to Meet the Product Defined in Claims 15 and 21 of Plaintiffs' Application for Patent.... 18
14. Process and Product Defined by Plaintiffs' Claims Comply With Most Rigid Tests of Invention as Laid Down by the Courts 18

TABLE OF CITED CASES.

Ex Parte Barrows 16
Catalin Corp. of America v. Catalazuli Mfg. Co....... 19
Lakeshire Cheese Co. v. Shefford Cheese Co.......... 20
In re Peddrick, et al.......... 19
Wisconsin Chemical Co. v. Chute 16

IN THE

United States Court of Appeals

FOR THE DISTRICT OF COLUMBIA

CLAYTON S. WOLF and
HARRY A. CURTIS,
Plaintiffs-Appellants,
v.
CONWAY P. COE,
Commissioner of Patents,
Defendant-Appellee.

No. 7414

April Term, 1939

BRIEF FOR PLAINTIFFS-APPELLANTS.

1. General Statement.

This is an appeal from a decree of the District Court of the District of Columbia dismissing a Bill of Complaint (R., 1)* in proceedings under R.S. 4915 against the Commissioner of Patents to authorize him to issue a patent. For the sake of simplicity, the plaintiffs-appellants and the defendant-appellee will be hereinafter referred to as the plaintiff and defendant respectively.

2. General Question Involved.

The broad question involved is the patentability of Claims 1, 2, 3, 7, 15, 18, 19 and 21 of the plaintiffs' application for Letters Patent, Serial No. 627,916 (R., 77-90).

The appealed claims are as follows:

> 1. The process which comprises coking bituminous coal in the form of briquettes in the presence of a

---

*References to the printed transcript of record are designated by the abbreviation R followed by numbers signifying the pages of said transcript. The pages of the record are numbered at the top thereof.

non-fluxing binder at a rate below that at which appreciable swelling of the coal would take place, said bituminous coal before coking being of the sort that swells when coked by heating it in the usual way.

2. The process which comprises coking finely ground bituminous coal in the form of briquettes in the presence of a non-fluxing binder at a rate below that at which appreciable swelling of the coal would take place, said bituminous coal before coking being of the sort that swells when coked by heating it in the usual way.

3. The process which comprises coking bituminous coal in the form of briquettes in the presence of a non-fluxing binder at a rate below that at which appreciable swelling of the coal would take place while heating it with hot non-oxidizing gas, said bituminous coal before coking being of the sort that swells when coked by heating it in the usual way.

7. The process which comprises forming a briquet containing bituminous coal and sulphite pulp waste liquor and carbonizing the briquet in the presence of a non-oxidizing gas by heating it to a temperature of about 500° C. until substantially all of the volatiles condensible at ordinary atmospheric temperatures have been driven off and then heating it to a temperature of about 700° C. to 1000° C., said heating being out of contact with air.

15. A dense carbonized product containing particles of carbonized bituminous coal and carbonized residue of sulphite pulp waste liquor, the particles of said product being sufficiently strongly bound together to form a hard and strong product, said bituminous

coal before coking being of the sort that swells when coked by heating it in the usual way.

18. The process which comprises forming a briquet containing ground bituminous coal and a sufficient amount of sulphite pulp waste liquor to prevent said briquet from swelling appreciably when it is heated between the temperatures of 300° and 500° C. at such a rate that the increment of temperature is between about 0.5° C. and 5° C. per minute, and carbonizing said briquet by heating it to a temperature between about 700° C. and 1000° C., said bituminous coal before coking being of the sort that swells when coked by heating it in the usual way.

21. A dense carbonized briquet having a smooth surface and containing particles of carbonized bituminous coal and carbonized residue of sulphite pulp waste liquor, said carbonized product having a volatile content less than 5% and a specific gravity of at least 1.10, said bituminous coal before coking being of the sort that swells when coked by heating it in the usual way.

3. The General Nature of the Invention.

This invention relates to a process for producing a strong, smokeless fuel briquette of high density from a bituminous coking coal. The coal to be treated is first finely ground, and then formed into raw briquettes in any suitable briquetting machine, using a suitable binder as an adhesive. The type of binder used constitutes one of the important features of the invention. The binder consists principally of an organic material, though the presence of minor proportions of inorganic material is permissible. An essential characteristic, however, is that the binder shall not flux the coal; that is, it shall not materially increase the fluidity or plasticity of the coal when the coal is heated to within the so-called plastic range. Such binders may be termed "non-fluxing." Typical non-fluxing binders which give good results are starch paste and molasses (R., 17). While all non-fluxing binders will give good results there is one outstanding non-fluxing binder, namely, sulfite liquor, which is the waste product from the sulfite pulp process of paper making. This binder gives exceptionally good results and permits producing the strongest and densest briquettes. The broadest claims of the application, Claims 1, 2 and 3, cover any non-fluxing binder and the remaining claims are directed to the preferred and best non-fluxing binder, namely, sulfite liquor.

The raw briquettes are then charged into any suitable retort and are carbonized to the finished coke briquettes by passing hot non-oxidizing gases into the retort. The process is preferably carried out continuously by passing the briquettes through the retort in one direction and flowing hot non-oxidizing gases through the retort in a countercurrent direction. Since the heating gases are in actual contact with each individual briquette as it is being carbonized, the briquettes may be rapidly heated and the rate of heating of the briquettes may be accurately controlled (R., 83). When the temperature of the briquettes reaches the point at which volatile matter begins to be evolved in considerable amounts from the bituminous coal, the rate of heating is carefully controlled to avoid a too rapid evolution of the volatile gases and a consequent disruption of the briquette (R., 84, 85). The non-oxidizing gases in passing over the briquettes assist in sweeping away the volatile gases being evolved therefrom as well as serving to heat the briquettes.

4. Error in the Court Below.

The Court below held that it did not involve invention to use waste sulfite liquor as the binder in the process of the patent to Smith, 1,276,429, in view of the use of that material as a binder in the processes of the patents to Komarek et al., 1,893,555, and the German patent to Schild, 111,757, nor did it involve invention to heat the briquette in a non-oxidizing gas in view of the use of this method of heating in the processes of the patents to Illingworth, 1,496,053, and Sewell, 1,855,950, nor did it involve invention to heat the briquettes at the rate specified in plaintiffs' application in view of the disclosure of the Baille-Barrelle patent, 1,458,964 (R., 157). This is the general error relied on.

5. Nature of Problem Solved by Inventors.

In making a high density fuel briquette the problem involved is primarily one of avoiding the formation of a bubble structure within the briquette (R., 19). When bituminous coal is heated, first any moisture is driven off, and then when the coal reaches a temperature of from approximately 300-400° C. the volatile tar vapors or hydrocarbon products within the coal begin to evolve rapidly as gases. At the same time the bituminous coal begins to soften and acquires fluidity or plasticity. This stage is referred to as the plastic stage. The evolved gases in their efforts to escape from the briquettes form bubbles in the pasty mass. Unless these bubbles can reach the surface of the briquettes and escape, before the coal hardens, this bubble formation will be permanent, and a porous, swollen product will result. This is the product which is seen in ordinary domestic coke and plaintiffs' exhibit No. 5 (R., 63) shows a typical pictorial representation thereof. When the temperature of the briquettes reaches about 500-600° C., the rapid evolution of the gases ceases, although some gases will still continue to be evolved throughout the final heating stage. It is in this intermediate stage that the principal difficulty arises and care must be taken to insure the escape of the bubbles from the plastic briquettes.

The bubble formation is analogous to the condition obtained when ordinary dough is raised. The yeast generates a porous structure in the bread, subsequent baking solidifies that porous structure into permanent position. In a similar manner this bubble structure is produced in ordinary coke and because of it this fuel can never be of high density, will lack strength, and the formation of the bubbles will generally disrupt any briquettes as can be seen from plaintiffs' exhibits Nos. 4 and 11 (R., 62, 69) which briquettes have a pitch binder and a water binder respectively. The problem then is to prevent the formation of the bubble structure by maintaining conditions in which the gases can escape from the briquettes at substantially the same rate at which they are being evolved within the briquettes.

It should be noted that the problem which is solved by the invention in the present case is one which is encountered only with bituminous coal. The formation of a plastic stage during carbonization, and difficulties encountered by bubble formation are not present with anthracite or semi-anthracite coals, nor are they encountered with partially or completely carbonized products such as various types of coke. None of these materials go through a plastic stage which gives rise to danger of swelling and bubble formation.

6. Problem Solved by Inventors One of Difficulty and of Great Industrial Importance.

The desirability of being able to produce a strong, smokeless fuel briquette of high density from bituminous coal suitable for use as a domestic fuel has long been recognized by the soft coal industry. The attempts in the past to solve this problem have followed two general lines. The first is a very slow heating, far slower than that which is employed in ordinary coke oven practice. This proposed method of producing a dense product is described in the Baille-Barrelle patent, No. 1,458,964 (R., 117-121), which is one of the patents relied upon by the Court below and the Patent Office. While it is, of course, possible to produce a dense product with infinitely slow heating, such a procedure is not practical as heating and equipment calls become unnecessarily high. The lengths to which the heating cycle has to be inreased are evidenced by the above-mentioned Baille-Barrelle patent, in which heating times greatly in excess of 30 hours are proposed with equipment only about one-half the size of the ordinary coke oven. It should be further noted that long time cycle proposed by Baille-Barrelle applies to coal densely packed in a coke oven retort. With briquettes loosely packed in a retort, the heating time would be greatly increased.

The second method and the only one which reached any real commercial production was that disclosed in the Smith patent, 1,276,429, the principal reference relied upon by the Patent Office in this case. Smith first transformed bituminous coal into a semi-coke which was then ground, briquetted and carbonized. In other words, Smith destroyed the swelling characteristics of his raw material by transforming it into a non-swelling material which presented no problem due to bubble formation any more than does anthracite or ordinary coke. Even this process of Smith proved to be too expensive and was commercially abandoned shortly after the termination of the abnormal economic conditions prevailing during and just after the World War (R., 48).

Plaintiff Wolf, a man experienced in this field since the time he worked on the commercial development of the Smith process in 1920 (R., 43) devoted more than a year's time to the discovery of the process of the present invention (R., 42).

7. Solution of the Problem.

As previously stated, the problem was to find the correct procedure to be followed in carbonizing the bituminous coal without the formation of the bubble structure therein. Obviously, if one single briquette were made from ground bituminous coal and heated so slowly that all the gases formed had time to escape during the plastic stage, a strong smokeless briquette of high density would be obtained but such a process would be of no commercial utility. In order for the process to be a commercial success, one must be able to carbonize a large number of the briquettes simultaneously and with a reasonable speed. Hence, during the time when the briquette is plastic, it must still have sufficient strength to withstand the weight of other briquettes above it, it must be plastic enough and held in the plastic state for sufficient time to permit the escape of the evolved gases without permanent bubble formation, and the time for heating through this plastic range must not be unduly prolonged. After months of experimenting, based upon their previous experience in the bituminous coal art, plaintiffs conceived the idea that if they tried a non-fluxing binder, then under proper conditions they might achieve success (R., 42). This was tried and plaintiffs found that by using such a non-fluxing binder and moderate rates of heating within the plastic range, the bubble formation was avoided and a dense briquette was obtained. Plaintiffs further found that such briquettes were unusually strong, even within the plastic range and would hold their shape although supporting a head-load of several feet of briquettes above them (R., 57). This unusual and unexpected strength obtained in the briquettes by the use of a non-fluxing binder enabled plaintiffs to overcome the disadvantage of having the briquettes form a solid plug when in the plastic stage which had offered such a great difficulty in the Smith process (R., 46-47).

Plaintiffs also discovered that by internally heating the retort in which the briquettes were being carbonized, the briquettes could be rapidly heated since they were in direct contact with the heated gases. Also, since all the briquettes were being exposed to the same temperature conditions, it was possible to control more accurately the rate of heating of the individual briquettes. While the method of heating the briquettes used for the experimental tests (R., 30-32) and in the process of the Smith patent (R., 105) is fairly satisfactory for small retorts, it has an important disadvantage which renders it unsuitable for large scale production in a large retort. This is because in trying to heat the coal in the central portion of an externally heated retort, the heat must flow through coal, which is a poor heat conducting substance. Because of this, wide temperature differences will exist between the various coal briquettes, some will be at temperatures in the plastic zone, others nearer the wall of the retort will be above this temperature zone, and those near the center of the retort will still be in the preliminary heating stages.

In order to avoid a too rapid heating in the plastic zone, the prior art and present commercial practice required that the entire carbonization process proceed at a slow rate of heating. Plaintiffs discovered, however, that by passing hot non-oxidizing gases directly through the retort, a uniform and controlled rate of heating of the briquettes may be maintained since they are in actual contact with the heating gases. Since the briquettes are at a uniform temperature they may be heated rapidly through the preliminary heating and final carbonization stages, and moderate heating rates need be used only while the bituminous coal briquettes are in the plastic range of temperatures. This novel method of heating the briquettes enables plaintiffs to produce, fully carbonized briquette in from 2 to 3 hours as compared with 18 hours for the standard coking process (R., 36), 11 to 16 hours for the process of the Smith reference (R., 52), and with the more than 30 hours which Baille-Barrelle states is necessary in order to produce a dense product. Plaintiffs' process results in a rapid all-over heating of the briquettes and is not an abnormally slow heating process.

To so heat the coal briquettes is possible with plaintiffs' process because the briquettes retain their shape even while passing through the plastic stage and hence there is no plug formation or filling up of the interstitial spaces, thus permitting the hot gases to pass through the retort in which the briquettes are being heated.

8. The Combination of References Relied Upon by the Patent Office and the Court Below.

In the final decision by the Board of Appeals of the Patent Office which is substantially that of the Court below, a combination of three factors is admittedly required to meet the real invention. First, the proposition is advanced that the product of the present invention is produced in a one-step process by the Smith patent. This does not meet the claims because there is no control of the heating of the product during the plastic stage, a feature to be found in all of the process claims of the present invention. Therefore, the Patent Office relied on the Baille-Barrelle patent to show a slow heating of coal. The third factor is the sulfite liquor binder and here the Komarek et al. and Schild patents are relied upon by the Court below. Neither patent, however, relates to a process that has any relation to that of the present claims because the one relates to a process in which the outside of the coal is set on fire and the other makes solid coke from anthracite coal which does not present any swelling problem.

In the Examiner's decision considerable stress was laid on both the Schild and Komarek et al. patents and the inapplicability of these two patents to the present invention was fully discussed in the arguments presented before the Board of Appeals of the Patent Office. These arguments were substantially accepted because the Board of Appeals and the Court below did not rely on either of these two patents as showing the invention. The most that can be said of them, therefore, is that they show that sulfite liquor has been used as a binder in carbonizing materials which do not present the problem of the present invention. This is a fact which is freely conceded by the plaintiffs.

In order to sustain the position of the Patent Office and the Court below, each of the three factors above must obtain. But as is shown clearly in the testimony, and as has been pointed out above and will be discussed in greater detail further on in this brief, the Patent Office is wrong in its assumptions with respect to both the Smith and the Baille-Barrelle patents. It is the incorrectness of these assumptions rather than the legal deductions which might be drawn from them which constitutes the error on which the present appeal is based.

9. The Basic Reference Relied on by the Court Below.

The basic reference relied on by the Court below and the Patent Office is the patent to Smith, 1,276,429 (R., 103-115). The main disclosure of this patent concerns a two-step process for making dense, smokeless fuel briquettes from coals within the bituminous range. In this two-step process the coal is first given a preliminary heating (R., 104-105) during which the tar vapors are largely removed. The partially carbonized coal is ground to destroy the bubble structure and then formed into briquettes and the carbonization completed during the second step in which the finished carbonized briquette is formed. In this two-stage process, in the second stage, Smith is not dealing with a true coking coal but during the time when he is actually forming the briquettes, the volatile matter has already been largely removed and the coal is, as he terms it, a semi-coke. This material offers no problem of swelling or bubble formation since the volatile matter has already been largely removed and Smith is not dealing with a coking coal in the carbonization of his briquettes. Such a two-stage process is obviously not comparable to applicants' single-stage process since it involves cooling and then reheating the briquettes, a procedure which obviously greatly increases the cost of the process. Moreover, the two-stage process is not relied upon either by the Board of Appeals of the Patent Office or by the Court below. The Board (R., 153, 154), in discussing the Smith patent, relies only on the one-step process and specifically states that Smith produced by this one-step process a product comparable to that which is produced by the process of the present application.

Smith does, it is true, suggest that with certain coking coals of low volatile characteristics it may be possible to omit the preliminary distillation step. Such coals, Smith suggests, might be carbonized directly to produce the finished briquettes. This one-step process, upon which the rejection was based, was never tried commercially as shown by Wolf's testimony (R., 48). It is doubtful that this process was ever even tried experimentally, and apparently this disclosure was merely inserted by Smith in his specification in the event that some commercially important coals were found which had properties similar to the product obtained from the first stage of his process. Such coals were never identified in the Smith patent.

The assumption that it is possible by following the one-step process described in the Smith patent to produce a product having the characteristics of that produced by the present invention is an essential assumption on which the decision of the Board of Appeals of the Patent Office is based and correspondingly on which the lower Court's opinion must rest. The main purpose of the testimony in the present case was to prove that this assumption with regard to the Smith process is in fact not true, and it follows that any conclusions logically drawn from such assumption must also be false. It should be noted that the Court below did not question the correctness of the testimony presented because there is no finding of fact in the opinion of the Court which contradicts any of the statements made by the witnesses or their experimental proof that the Smith one-step process is incapable of producing a product such as is obtained by the process of the present invention.

10. Plaintiffs Unable to Obtain Suitable Product Using the Process of the Smith Reference Upon Which Rejection is Based.

As set forth in detail from the testimony of Dr. Beardsley (R., 20-32) tests of the Smith one-step process were conducted under the supervision of Dr. Beardsley, a man with more than twenty years' active experience in the soft coal industry in both research and development work. In these tests Dr. Beardsley used typical, commercially important, bituminous coals falling within the range of volatile matter specified by Smith as suitable for use directly in a one-step process. These samples were carbonized in accordance with the procedure outlined by Smith using the most favorable conditions wherever it became necessary to supplement the general procedure outlined by Smith with specific steps.

The raw briquettes were made up using water as a temporary binder and a pitch or bituminous binder, both as taught by Smith. For comparison purposes briquettes were made up with a sulfite liquor binder as taught by plaintiffs. Plaintiffs' exhibits 3 to 15 (R., 61-73) clearly show that a suitable commercial product was not obtainable using either a water binder or a pitch binder. These exhibits are pictorial representations of the products obtained by carbonizing briquettes with the various binders. The cards with the single ordinal 1 indicate the samples obtained by carbonizing briquettes bound with a temporary water binder (R., 61, 65-72). The cards with the single ordinal 3 indicate the samples obtained by carbonizing briquettes bound with a pitch binder (R., 62, 63). In contrast therewith those briquettes carbonized with a sulfite liquor binder, indicated by the cards with the single ordinal 2 (R., 65, 68, 71, 73) are a suitable commercial product of a density comparable to anthracite (R., 74). The results of Dr. Beardsley's tests show conclusively that a man skilled in the art following the procedure outlined by Smith in his one-step process using the binder taught by Smith, would be unable to produce a satisfactory commercial product.

11. References Not Properly Combined in Fact or in Law to Meet the Process Defined in Claims 1, 2 and 18 of Plaintiffs' Application for Patent.

In order to meet the invention defined by these claims, it is necessary to modify the Smith one-step process, which is of itself inoperative, and substitute for the binders taught by Smith a non-fluxing binder (Claim 18 specifically calls for sulfite liquor), and it is further necessary to control the rate of heating of the briquettes to prevent the formation of the bubble structure therein.

The Court below and the Patent Office have taken the position that it would not involve invention to use waste sulfite liquor, which has been proposed for the manufacture of briquettes by Komarek et al., 1,893,555 (R., 132-137), and proposed for use in the carbonization process of the German patent to Schild, 111,757 (R., 139, 140), in place of the water or pitch binder proposed by Smith. However, Smith distinctly states that one of the features of his process is that he merely needs to employ a binder temporarily in the forming of the briquette (R., 108) and that one of its advantages is the avoiding of the necessity for the use of a permanent binder. While such a temporary binder was fairly adequate in the Smith two-stage process as operated commercially, it remained for plaintiffs to discover that a permanent non-fluxing binder would give sufficient strength to the briquettes during their plastic stage so that they would not fuse together, and yet would permit the volatile gases to escape from the briquettes. The use of a binder of this type is therefore not only not suggested by the Smith patent but is directly foreign to the teaching the patent itself. Such a combination of references is easily made after plaintiffs discovered the method of making dense strong briquettes in a one-step process, but the test as laid down by the courts is, as to whether the proposed change would be obvious to the man skilled in the art, and whether there is any suggestion in either of the references or the combination as to the desirability of the change.

Furthermore, there is no suggestion in either Smith or the Komarek et al. or Schild references as to the necessity for controlling the rate of heating. In fact, Komarek et al. teaches just the opposite, since he actually burns the exterior of his briquettes to carbonize the interior. Schild makes no reference to temperature control and furthermore he is dealing with non-coking or poorly coking coal with which the problem does not arise. Smith also makes no reference to temperature control and he, too, is dealing with a poorly coking coal in the second stage of his two-step process, and presumably refers to a similar coal for use in his one-step process.

In order to meet these claims, the Court below and the Patent Office relied on and combined with the Smith reference, still another patent, that of Baille-Barrelle, 1,458,964 (R., 117-121). But as has been pointed out before, the process of this patent is an extremely long one, and relates to the manufacture of metallurgical coke, not briquettes as called for by plaintiffs' claims. Here also, there is no suggestion in either Smith or Baille-Barrelle as to the necessity for or desirability of making the change. Inasmuch as there was no suggestion as to the desirability of these changes or of the manner in which the individual teachings of the references could be combined into an operative process, plaintiffs feel that the Court below erred in denying the patentability of Claims 1, 2 and 18 of their patent application. In order to reject these claims the Court below was compelled to combine the teaching of at least three references and to so modify the Smith process that it bore no resemblance to the teaching of Smith or to any of the other references. As was stated by the Circuit Court of Appeals for the 7th Circuit in *Wisconsin Chemical Company* v. *Chute* (1919): "Even where all the steps are old, anticipation is not established, unless it further appears that the steps (old individually) were employed in the relation to one another as disclosed in the patent the validity of which is attacked" (261 Fed. 89 at page 92).

Plaintiffs also are unable to see, especially in view of their proof of the inoperativeness of the Smith one-step process, how the decision of the Court below and the Patent Office can be reconciled with the test for invention as laid down by the Board of Appeals of the Patent Office in *Ex parte Donald S. Barrows*, in which the Board stated: "It will be seen that this rejection is based on at least four patents. The Examiner has not stated how the various features which he relies on may be incorporated into the Garrett patent without considerable modification and it is not apparent to us" (34 Pat., Q. 301, at page 302, 1936).

12. References Not Properly Combined in Fact or in Law to Meet the Process Defined in Claims 3 and 7 in Plaintiffs' Application for Patent.

In order to meet the invention defined by Claims 3 and 7 it is not only necessary to use a non-fluxing binder and a controlled rate of heating in the Smith one-step process, but it is also necessary to pass hot non-oxidizing gases through the retort to heat the coal therein rather than heat the retort externally by means of fuel burners as taught by Smith. The Court below and the Patent Office have taken the position that it would not involve invention, having changed to a waste sulfite liquor binder, to heat the briquettes by passing hot non-oxidizing gases through the retort in view of the use of this method of heating in the patent to Illingworth, 1,496,053 (R., 122-126). However, there is no suggestion in the Smith patent as to the desirability of the change and because of the plug formation, which would prevent hot gases flowing through the material, in either the Smith one-step or two-step processes, it would be impossible to use this method of heating the briquettes in the Smith retort. Inasmuch as there was no suggestion as to the desirability of the change and the change would be inoperative unless the proper binder were also used in the Smith process, plaintiffs feel that the Court below erred in denying the patentability of Claims 3 and 7 of thir patent application.

13. References Not Properly Combined in Fact or in Law to Meet the Product Defined in Claims 15 and 21 of Plaintiffs' Application for Patent.

In order to obtain the product defined by Claims 15 and 21, it is necessary to use at least so much of plaintiffs' process as defined by Claim 18 of plaintiffs' application for patent. Claims 15 and 21 call for a product of high density (specifically at least 1.10 in Claim 21) containing particles of carbonized bituminous coal and carbonized residue of sulfite pulp waste liquor, made from a bituminous coking coal. To obtain this product, sulfite liquor must be added to the coking coal as called for by Claim 18, and to secure a dense product, the heating of the coal within the plastic range must be within the rates specified in Claim 18. The Court below and the Patent Office having taken the position that it would not involve invention to use waste sulfite liquor as a binder in place of the water or pitch binder proposed by Smith, and that it would not involve invention to use a controlled rate of heating, held that the product of the thus modified process would not be patentable. For the reasons discussed supra in connection with the error of the Court in denying the patentability of Claim 18 of plaintiffs' application, plaintiffs likewise feel that the Court erred in denying the patentability of Claims 15 and 21.

14. Process and Product Defined by Plaintiffs' Claims Comply With Most Rigid Tests of Invention as Laid Down by the Courts.

The process developed by plaintiffs complies with the most rigid tests laid down by the Courts in judging patentability. The process has been operated on a practical commercial scale (R., 31, 32) and given patent protection so that it might develop commercially would serve as a valuable aid in enabling the ailing soft coal industry compete on even terms with other fuels in the domestic fuel market. While no single step of the process is novel per se it remained for plaintiffs, after long and expensive research based on their experience in the art, to correctly analyze the difficulties that had been offering such obstacles to the many prior workers in this field, and to discover the solution of the problem. Once plaintiffs have pointed the way, it is easy to apply hindsight and pick from the voluminous prior art patents showing that each step of plaintiffs' process is old but this procedure does not correspond to the test for invention as laid down by the Courts, as for example the:

Court of Customs and Patent Appeals (1931)—"It should not be overlooked that Claim 7 here calls for a patent for steps in a process and that the authorities have gone far in extending protection to an inventive process even though each of the steps were old, if the steps were so related to each other as to bring about a new and useful result. The fact that the process may seem very simple is immaterial." *In re Peddrick, et al.*, 9 Pat., Q. 269 at 272; 18 C. C. P. A. 1161 at 1164, 48 Fed. 2d 415 at 418.

Circuit Court of Appeals, 2d Circuit (1935)—"But nobody so far as we can find, had ever treated a mix of the prescribed proportion *by all these steps.* The difference might be of little or of very great importance; it might be a step which the art was sure to take, or it might demand a high degree of originality; it is impossible to decide such questions of priori, and it is a mistake to belittle the invention because it demanded only a trivial variant. The true question is what new understanding was a condition upon its appearance, however inconspicuous by itself the variant might be." *Catalin Corp. of America* v. *Catalazuli Manufacturing Co.*, affirming decree, 11 Fed. Sup. 603; 26 Pat., Q. 225, in 79 Fed. 2d 593 at 597; 27 Pat., Q. 371 at 375.

Circuit Court of Appeals, 7th Circuit (1934)—"It may be that most, if not all the elements involved in Wheeler and Scott's process for treating cheese are old, but they were the first to so put them together as to produce the method which possesses both novelty and utility." *Lakeshire Cheese Co.* v. *Shefford Cheese Co.,* 23 Pat., Q. 184 at 187*;* 72 Fed. 2d 497 at 500.

Summary.

The plaintiffs submit that the Court below erred in their application of the law as laid down in their decision. Plaintiffs' process is a practical solution on a commercial scale of the problem of obtaining dense, hard, carbonized briquettes from bituminous coal in a single operation. The four features entering into the plaintiffs' process, namely, bituminous coal, a non-fluxing binder, preferably waste sulfite liquor, controlled rate heating and, in the more specific claims, the use of a non-oxidizing gas are all expedients which individually are known. The result of combining them together, however, is new. In order to meet the terms of plaintiffs' process, the Court below and the Patent Office have had to combine the above features taken from four separate patents, no one patent suggesting that either of the others could be used in conjunction with it.

It is submitted that the rejection of the claims by the Patent Office, which rejection was accepted by the Court below, was based on a presumption that the result as well as the individual steps is old. The Board of Appeals of the Patent Office has specifically stated that the one-step process of the Smith patent produced the product obtained by the plaintiffs' process. The testimony below against which no objections have been raised by the Court, negatives this presumption. Plaintiffs have produced a new and economically important result by combining individual steps which have never been combined before. The combination of the individual steps as described in their respective patents is not justified by any suggestion therein and if made will not produce the process invented by the plaintiffs because even if all of the four steps are combined together, an excessively long heating period of more than 30 hours rather than a short period of 2 or 3 hours will ensue.

Plaintiffs are the first to combine the four features of the prior art to produce a new and important result and are therefore legally entitled to obtain patent protection therefor. Accordingly, this Honorable Court is respectfully requested to reverse the decision of the Court below and to order the Commissioner of Patents to issue a patent to the plaintiffs covering the invention as defined in the appealed claims.

Respectfully submitted,

ROBERT AMES NORTON.

No. 7414

In the United States Court of Appeals for the District of Columbia

OCTOBER TERM, 1939

CLAYTON S. WOLF AND HARRY A. CURTIS,
APPELLANTS

v.

CONWAY P. COE, COMMISSIONER OF PATENTS,
APPELLEE

APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES FOR THE DISTRICT OF COLUMBIA

BRIEF FOR THE COMMISSIONER OF PATENTS

W. W. COCHRAN,
Attorney for the Commissioner of Patents,
Appellee.

INDEX

Page
Introduction 1
Appellants' Application 2
Smith Patent 2
Komarek et al. Patent 3
Schild Patent 4
Baille-Barrelle Patent 4
Illingworth Patent 4
Appealed Claims 4
Summary of Argument 4
Argument 5
Conclusion 8
Authorities Cited:
- *Droop, In re*, 30 App. D. C. 334 7
- *Lang et al., In re*, 497 O. G. 551, 97 F. (2d) 626, 25 C. C. P. A. 1322 7
- *Model Bottling Machinery Co.* v. *Anheuser-Busch Brewing Association*, 190 Fed. Rep. 573 8
- *Mond, In re*, 16 App. D. C. 351 7
- *Peddrick, Jr., et al.*, 18 C. C. P. A. 1161, 48 F. (2d) 415 8

In the United States Court of Appeals for the District of Columbia

OCTOBER TERM, 1939

No. 7414

CLAYTON S. WOLF AND HARRY A. CURTIS,
APPELLANTS
v.
CONWAY P. COE, COMMISSIONER OF PATENTS,
APPELLEE

APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES FOR THE DISTRICT OF COLUMBIA

BRIEF FOR THE COMMISSIONER OF PATENTS

INTRODUCTION

This is an appeal from the judgment of the District Court of the United States for the District of Columbia (R. p. 157) dismissing appellants' complaint brought under Section 4915 R. S. (U. S. C., title 35, sec. 63) to authorize the Commissioner of Patents to issue to appellants a patent including claims numbered 1, 2, 3, 7, 15, 18, 19, and 21 of their application No. 627,916. A number of other claims of the application were presented by appellants in their complaint but were withdrawn at the trial.

APPELLANT'S APPLICATION

Appellants' application (R. p. 77) relates to a fuel briquet and the process of making the same. The process may be described as follows:

Bituminous coal is ground to a powder and then mixed with sulphite liquor which is a waste product in the manufacture of paper. The mixture is then molded into a briquet and the same is then heated to a temperature of from ~~over~~ 300° C. to 500° C. at a rate of .5° C. to 5° C. per minute. This heating dries and hardens the briquet and drives off certain highly volatile constituents of the coal. The briquet is later subjected to a further heating to a temperature of about 700° C. to 1,000° C. This heating takes place in a chamber from which air is excluded and is brought about by subjecting the briquet to a current of highly heated nonoxidizing gas. During the second period of heating the briquets are raised in temperature at the rate of about 5° C. per minute. This second heating results in the production of briquets of a specific gravity of 1.10, or more, and with a volatile content of less than 5%.

THE SMITH PATENT

The Smith patent, 1,276,429 (R. p. 103), discloses a process for making a briquet of bituminous coal. The coal is first heated to a temperature varying from 825° F. to 1200° F., that is to say, to a temperature varying ~~between~~ from 441° C. to 649° C. This first heating distills off some of the volatile matter contained in the coal. The coal is then pulverized and mixed with water, tar pitch, asphalt pitch, tar or petroleum oils and formed into briquets which are heated in an oven or retort to a temperature of 760° C. to 1910° C. During this second heating the volatile constituents of the briquet are largely removed and the briquet is hardened. The briquet thus produced has a volatile content of 2½% and a specific gravity of 1.3, or more.

THE KOMAREK ET AL. PATENT

The Komarek et al. patent, 1,893,555 (R. p. 132), discloses a process of making a fuel briquet out of a mixture of anthracite and bituminous coal. The coal in comminuted form is mixed with sulphite liquor and then formed into briquets. The briquets are gradually raised in temperature to approximately 600° F. or 315° C. This heating evaporates the moisture contained in the briquet. The briquets are then subjected to heat in a distillation chamber in which the temperature of the briquet is gradually raised to 1,100° F. or 590° C. During this second stage of heating some of the briquets are ignited and the gases being driven off will furnish the necessary heat to raise the temperature of the briquets to the degree just stated. The briquets are later subjected to a further heating to a temperature from 538° C. to 760° C. During this stage of the heating the briquets are uniformly carbonized to produce the final product.

THE SCHILD PATENT

The German patent to Schild, 111,757 (R. p. 139), discloses a process of making a fuel briquet of anthracite coal and brown coal in which a binder of sulphite liquor is used.

THE BAILLE-BARRELLE PATENT

The Baille-Barrelle patent, 1,458,964 (R. p. 116), discloses a process of coking coal in which the coal is heated gradually with a rise of temperature of .5° per minute.

THE ILLINGWORTH PATENT

The Illingworth patent, 1,496,053 (R. p. 122), discloses a process of making briquets by the carbonization of coal. In carrying out the process the briquets are heated in an atmosphere of non-oxidizing gas.

THE APPEALED CLAIMS

The claims on appeal appear in the record on pages 3 to 7, inclusive.

SUMMARY OF ARGUMENT

1. The claims on appeal are not patentable over the Smith patent considered in connection with other patents.

2. There is nothing new in any of the steps of the process recited in the claims on appeal.

3. Claims to a process may properly be rejected on the combined disclosures of issued patents if invention is lacking.

ARGUMENT

On reference to the Smith patent it will be observed that the process disclosed therein corresponds closely to that set forth in the claims on appeal. Smith makes his briquet from bituminous coal mixed with a binder which may be water or coal-tar pitch, etc. He first heats the coal to a temperature of from 443° C. to 649° C., which corresponds roughly to temperature of 300° C. to 500° C. utilized by appellants in their first stage of heating. Smith then heats the briquets to a temperature of 760° C. to 1010° C. which corresponds almost exactly to appellants' range of temperature in the second stage of heating, namely, 700° C. to 1000° C. The briquets produced by Smith have a specific gravity of 1.3 and a volatile content of 2½%. These values are comparable to the values set forth in appellants' claim 21. While Smith does not disclose the use of sulphite liquor as a binder for the powdered coal the use of such material for this purpose is well known in this art, as is shown by the Momarek et al. patent, and the Schild patent, discussed above. The rate of heating specified in appellants' claims 18 and 19, while not disclosed in the Smith patent, is a feature of appellant's process which does not appear to involve invention but rather a matter to be determined by experimentation to obtain the optimum result. Moreover, the patent to Baille-Barrelle, discussed above, discloses a process of coking coal in which a corresponding rate of heating is employed.

Appellants' claims 3 and 7 state that the briquets are heated with a nonoxidizing gas. That this is a well-known means for heating briquets to avoid igniting the same during the heating is shown by the patent to Illingworth.

It is submitted that when the prior art patents to which reference has been made are considered it will be found that nothing set forth in appellants' claims is new. While it is true that no one of the prior patents discloses all of what is set forth in the claims, the Smith patent discloses the broad equivalent thereof, and the other patents referred to clearly teach whatever modification of the Smith process is necessary to meet these claims.

Appellants seem to argue that it is improper to combine the various references to show the various steps set forth in the claims. It is submitted, however, that claims may properly be refused on the combination of references unless it appears that in combining steps of known prior processes an applicant has made an invention.

This Court has held that it is proper to combine prior art patents to meet claims to a process where an applicant has merely borrowed steps from known processes. In *In re Mond's Appeal,* 16 App. D. C. 351, this Court said:

> Now, the addition of one well-known process to another well-known process does not constitute invention unless some different or better result is produced than that which had been previously obtained; and it is not apparent here that there has been any such result.

In the case of *In re Droop,* 30 App. D. C. 334, this Court, in affirming the Commissioner of Patents in rejecting a claim for a method of covering tennis balls, said:

> Anyone skilled in the art, and who desired to produce a cloth or knitted cover for tennis balls, would have had no difficulty in producing the result found in the rejected claims, had he consulted the references. Two of these references contain the idea of covering inflated rubber balls with a crocheted or knitted cover. Another contains the idea of inserting a deflated rubber ball in a cover, inflating the ball, and then closing the aperture.
>
> The decision of the Commissioner was right, and is therefore affirmed.

The United States Court of Customs and Patent Appeals has taken the same position. In the case of *In re Lang et al.,* 497 O. G. 551, 97 F. (2d) 626, 25 C. C. P. A. 1322, that Court held that the Patent Office had properly rejected certain claims for a process of preserving dietary liquids on a plurality of prior patents. The Court said:

> The fact that no single reference shows all the steps and that no reference shows the steps in the exact order named does not change the situation, since, in view of the prior art, what appellant has done would be the obvious thing to do in order to produce the claimed results.

and cited its earlier decision in *In re Peddrick, Jr., et al.,* 18 C. C. P. A. (Patents) 1161, 48 F. (2d) 415.

Moreover, it is submitted that a process may be properly held unpatentable over previously known processes even though it is not precisely like the earlier processes. In support of this proposition attention is called to the decision of the Circuit Court of Appeals for the 8th Circuit in the case of *Model Bottling Machinery Co.* v. *Anheuser-Busch Brewing Association,* 190 Fed. Rep. 573, in which the Court said:

> * * * it is not necessary, in determining the question of anticipation, that the process should be identical in all particulars. It is sufficient if in general aspects the two processes are the same and the difference in minor matters is only such as would suggest themselves to a person possessing ordinary skill in the art.

CONCLUSION

In conclusion it is submitted that when the prior art patents are considered it will be found that nothing in the appealed claims involves invention over what the earlier patents disclose. It is therefore submitted that the judgment of the lower court should be affirmed.

W. W. COCHRAN,
Attorney for the Commissioner of Patents,
Appellee.

SEPTEMBER 1939.

U. S. GOVERNMENT PRINTING OFFICE: 1939